

Feasibility of Piping Lower Cedar Mesa Ditch

Sponsored by the
Cedar Mesa Ditch Company and the National Resource Conservation Service

August 2019

FEASIBILITY STUDY APPROVAL
Pursuant to Colorado Revised Statutes 37-60-121 & 122, and
in accordance with policies adopted by the Board, the
CWCB staff has determined this Feasibility Study meets all
applicable requirements for approval.

Matthew 8/29/19
Signed Date

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Introduction and Background

Cedar Mesa Ditch Company (CMDC) was organized October 13, 1898 as a non-profit water conveyance company (Appendix A). From the Surface Creek head-gate, it is approximately 12 miles to the end of the ditch. It has 403 shares of stock owned by 59 shareholders who raise cattle, hay, peaches, apples, plums, apricots, grapes, Colorado native plants and recently hemp. The company owns water rights to water that originates from precipitation and snowmelt on the Grand Mesa. In addition, the company shareholders use the ditch to convey water from more than a dozen of the 108 reservoirs that exist on the Grand Mesa. In an average year, the ditch conveys about 6000 acre-feet to irrigate approximately 1050 acres of land.

Currently, irrigation water is lost from Cedar Mesa Ditch through seepage and evaporation. During an average irrigation season, 20% of conveyed water is lost to “shrink”. The percentage of shrink is roughly inversely proportional to the amount of water in the ditch. During the drought of the 2018 season, water shortages resulted in almost 50% of the ditch’s water being lost to seepage and evaporation. This loan request is to help finance piping of the portion of the ditch through which most of the loss occurs. Conservation and recovery of this water will greatly benefit all agriculture served by Cedar Mesa Ditch.

Project Sponsors

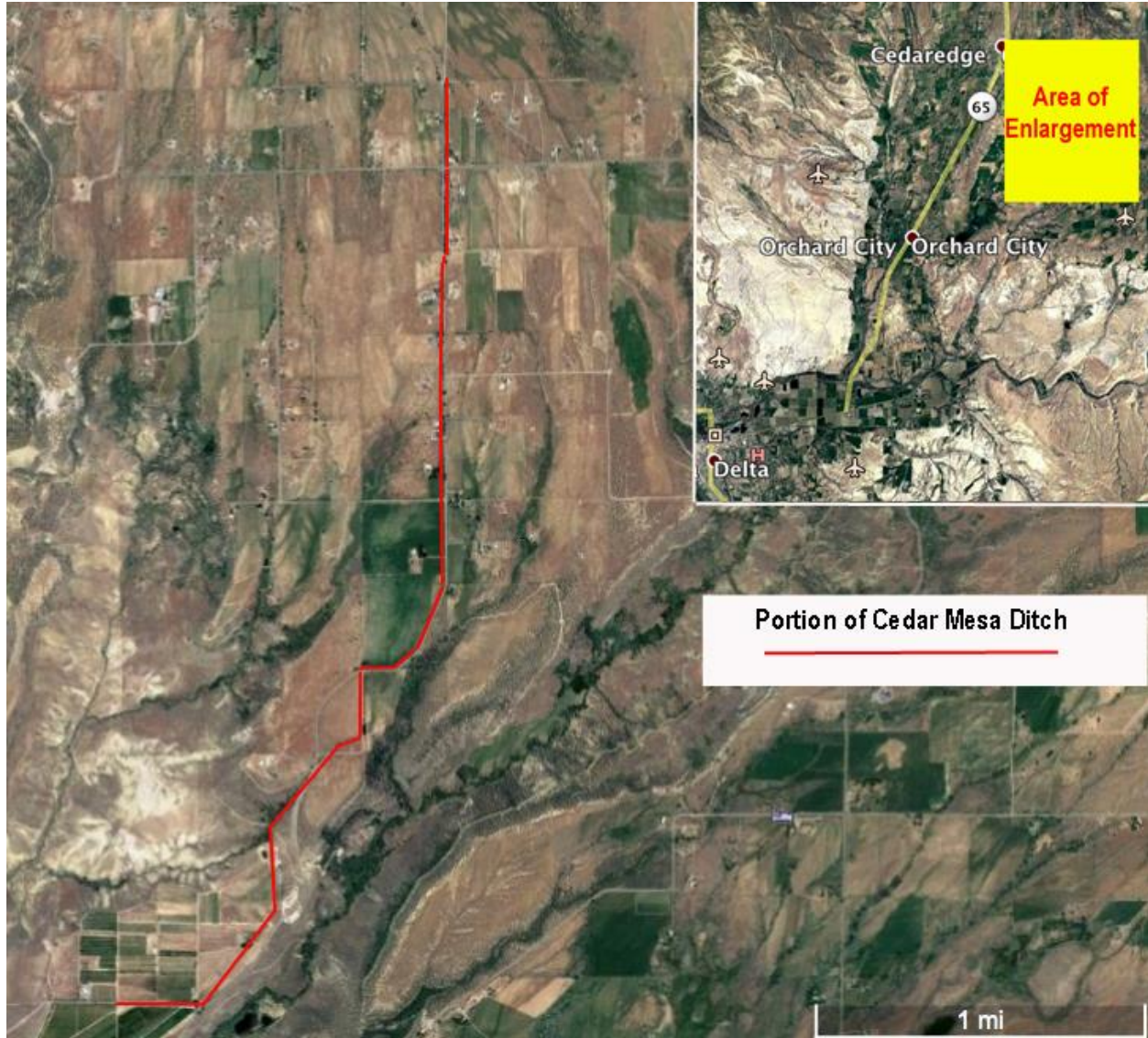
The project sponsors are the CMDC in conjunction with the National Resource Conservation Service and hopefully Colorado Water Conservation Board. The CMDC is a mutual ditch company and a non-profit corporation registered in the State of Colorado. There are 59 shareholders and 403 shares of stock. The CMDC By-Laws (Appendix B) determine the authority to set annual assessments to be paid by the shareholders, the authority to cut off water deliveries to shareholders that fail to pay their assessments, and the authority to offer stock for sale to pay back assessments.

Project Service Area and Facilities

The location of Cedar Mesa Ditch is shown below in Figure 1 and in a more detailed map in Appendix C. The ditch supplies approximately 40 head gates, From the Surface Creek head-gate it is approximately 12 miles to the end of the ditch. There are four gates that can allow excess flow to return to the Gunnison River via Currant and Dry Creeks and Surface Creek. Head gates are the responsibilities of the individual shareholders and each must be fitted with a Parshall Flume for water measurement. The main head gate on Surface Creek was rebuilt in 2014.

The ditch is entirely open and has a 50-ft easement. It runs through Quaternary alluvial gravels and the Mesa Verde Formation in the upper 4 miles and the Mancos Shale in the lower 6 miles. Previous studies have determined that most of the seepage and salt leaching occurs in the Mancos Shale.

Figure 1. Location of Cedar Mesa Ditch in Delta County, Colorado



Hydrology and Water Rights

The company owns four water rights as follows: 1) September 1894, Surface Creek #36, 10 cfs.; 2) September 1894, Surface Creek #A32, 16 cfs.; 3) January 1999, Surface Creek #98CW30, 24 cfs.; 4) Aug. 1936, J-52, 2 cfs. The State of Colorado water right tabulation for Cedar Mesa Ditch is shown in Appendix D. These water rights are provided for by snow-melt from the Grand Mesa. The water quality of Grand Mesa water is excellent. In addition, company members own numerous water rights from many of the 108 reservoirs on the Grand Mesa. Early or runoff water may provide as much as 3000 acre-feet during the spring and early summer after a high snowfall year. In contrast, during the drought of 2018, there was no early water. Reservoir water provides another 3000 acre-feet of water in the summer and early fall.

In the two last decades, several producers served by the ditch have installed water conservation equipment including drip, micro-sprinklers, side roll, and pivot irrigation. The significant elevation drop of Cedar Mesa Ditch (6%) has allowed users to develop on-farm pressurized systems using gravity. Nevertheless, the ditch's ability to serve the members has become increasingly inadequate due to dry years and significant seepage in the lower portion of the conveyance. This shortage was evidenced during the drought of 2018. Several ranchers lost local hay crops requiring importation of feed. Additionally, several fruit producers had to lease expensive water or lost their fruit crops altogether.

During the last half century, Cedar Mesa Ditch has seen a decrease in the volume of water carried for irrigation. Records indicate more than a 30% reduction in flow since the late 1960s. This is thought to be due to, in part, to the unique hydrological and regulatory setting of the irrigations system in the Surface Creek Valley. Much of the agriculture in the area relies on water from more than 100 reservoirs on the Grand Mesa. In this area reservoir water is not tied to any particular piece of land and can be moved or sold. In the last 50 years, significant water resources have been sold to municipalities or diverted from agriculture for other uses. This is evidenced by abandoned and breached reservoirs on the Grand Mesa and by "marked" fields no longer in production on Cedar Mesa. The consequences of this "buy and dry" has been a decrease of overall flow in the ditch. Seepage has stayed about the same resulting in a much greater proportion of water lost to "shrink" than it was in the past.

Project Description and Alternatives

This application is for the cost of materials and construction of the Lower Cedar Mesa Ditch pipeline. It includes the major purchases of pipe, concrete, and fill dirt in addition to smaller miscellaneous supplies and expendables. The budget also includes construction and installation costs of driveway and road crossings, inlet and outlet boxes, vents, flanges, and the cost of fusing h.d.p.e. pipe.

The pipeline will be constructed in the existing ditch right-of-way. No additional land purchases or easements are required. Feasibility studies and preliminary engineering design plans are complete. CMDC funded the preliminary engineering study for \$12,000.

Cedar Mesa Ditch is supplied from Surface Creek which, in turn, is fed by numerous reservoirs on the Grand Mesa. The 12-mile ditch supplies irrigation water to 1050 acres through 37 head-gates. Some head gates serve as many as 4 shareholders. It serves 59 shareholders who raise cattle, hay, peaches, apples, plums, apricots, Colorado native plants, grapes and hemp. The lower part of the ditch runs through Mancos Shale where seepage is the greatest. It is estimated that piping the lower 3.5 miles of the ditch will recover 60% of the shrink, or about 720 ac/ft in an average year. This recovery will significantly reduce salt and selenium leaching from the ditch through the Mancos Shale. BOR estimated the salt recovery at 900 tons/yr and NRCS estimated salt recovery at 800 tons/yr.

Most irrigation water rights in the Surface Creek Valley belong to private, non-profit ditch and reservoir companies. Irrigation water is not tied to land and may be leased or sold to other users.

Typical costs for leasing are about \$100 per acre-foot, depending on availability (weather). During the 2018 drought year water was leased for \$200 an acre-foot. Piping this portion of the ditch would recover about \$72,000 worth of water. In a drought year like 2018, that value would be more than \$200,000 if the water were available.

The project is phased to be completed in 3 years. Each year approximately 35% of the construction will be completed.

In addition to construction costs, there may be some final design changes as construction continues. Also, we expect to incur costs for a project supervisor and accountant.

The CMDC anticipates repaying the bulk of the loan from NRCS grants. The Company estimates that after completion of the project, about \$300,000 may be left on the loan to be paid over 30 years. The membership has approved raising assessments to provide approximately \$13,000 each year to service that loan. The Company will continue to pursue grants to reduce the outstanding amount.

Many alternatives have been considered in the past 50 years, but 5 alternatives were considered during the current project discussion period:

1. The no-action alternative.
2. Enter into the BOR salinity program to pipe Cedar Mesa Ditch (*\$900,000).
3. Proceed jointly with Lone Pine Ditch to enter the BOR salinity program (*\$15 million).
4. Enter into the BOR salinity program to pipe the lower portion of Cedar Mesa Ditch (*\$800,000).
5. Work with 3 individual shareholders and the NRCS EQUIP Program to pipe to lower portion of cedar mesa Ditch (*\$300,000).

*Amounts in parentheses are estimated funds that needed to be provided by company.

CMDC commissioned an engineering study to pipe the ditch in 1975. At that time, the \$315,200.00 cost included an upstream reservoir to control daily fluctuations of the ditch. The Company was considering a 50-yr loan at 6% interest. The report cites a June, 1973 Watershed Investigation Report prepared by the Soil Conservation Service that estimated seepage at 40-50% for the entire ditch. Included in the report is an extensive economic analysis demonstrating the expected return benefit based on the economics of agriculture in the area and the increased availability of water. Two summary pages of the report are attached (Appendix D). The report does not say why the plan was not followed, but one might assume it involved the cost. Nevertheless, no action was taken on the 1975 plan. Major changes have occurred in the past 45 years including the number of shareholders making most of their income from agriculture as well as the economics of agriculture in the Cedar Mesa Ditch area. These changes, in part, have prompted the consideration of the alternative plans listed above with outcomes as follows:

Alternative No. 1 is considered unacceptable because water loss is seriously impacting the economic viability of agriculture long the ditch.

Alternative No. 2 proved financially unacceptable to the membership. The requirement to raise \$900,000 is more than the shareholders were willing to support.

Alternative No. 3 was even more onerous to the shareholders. The economies of scale expected to be realized by combining two ditches did not materialize and the added cost of piping the additional ditch was not offset by the additional salt savings. The cost to both companies after grants would be \$15,000,000.

Alternative No. 4 was a breakout of Alternative 3, piping only that portion of the ditch with the greatest salt savings which is the lower 3 miles of Cedar Mesa Ditch. At a total cost of \$2.2 million, and with \$800,000 to be borne by the company after grants, this alternative also proved unacceptable to the shareholders.

Alternative No. 5 was selected as it is the least costly, most reliable project at an after-grant cost to the company of about \$300,000. The majority of the shareholders found this alternative to be acceptable.

Selected Alternative

The NRCS EQUIP program provides up to \$450,000 per farmer to improve his irrigation system, including off-farm property upstream from his property. There are three participating farmers on this project. Based on our preliminary engineering, NRCS estimates the project will cost \$1,072,274.50. They are able to grant the members about 75% of that or approximately \$800,000. The company will need to cost-share the project by raising approximately \$300,000. The Company has agreed to the cost-share through contracts with the members who participate in the NRCS program. Although small portions of this amount may be available through Colorado River District grants, our representatives to the Gunnison Basin Roundtable indicate no large grants of this amount are currently available. The CWCB has funding for low interest (1.65% as of July 2019) loans. A \$300,000 loan will require annual servicing from the company of about \$13,000/year for 30 years.

There are various ways the Company can raise that amount through increased assessments:

- A. Divide the cost by the number of Company members;
- B. Divide the cost by the number of shares;
- C. Divide the cost based on usage;
- D. Divide the cost by 50% membership and 50% usage;
- E. Divide the cost by 50% shares and 50% usage.

Note that including usage introduces a highly variable factor into the calculation as usage varies by a factor of 5 year to year. From comments received at a recent shareholders meeting, fairness is a concern. The greatest inequity is for payments to be based on usage and least inequity is based on a combination of payments based on 50% shares and 50% usage.

Three membership meetings were held to discuss alternative methods of financing the ditch project. The first meeting gave the board permission to study alternatives and seek preliminary design criteria. The second discussed pros and cons of the Bureau of Reclamation salinity

program. The third meeting discussed pros and cons of the NRCS programs and the members selected the EQUIP program as the most feasible. The membership was polled by mail to vote for a plan to pay for the cost of piping that might not be covered by grants.

Eighty three percent of the membership (87% of the shares) voted for piping the ditch using one of several payment methods to cover the cost of a construction loan to complete the project. The majority of members (252 shares) voted for the “cost by member” (Option A above) method to finance the project.

The company paid for preliminary design plans that formed the basis for estimating the time cost of construction. Preliminary engineering plans are included as Appendix E of this loan application.

Cost Estimate

The Delta County Office of the Natural Resources Conservation Service (NRCS) has prepared cost estimates for the project. Preliminary engineering design was financed by the CMDC. The estimated cost of the completed project is \$ \$1,072,274.50, including a 10% contingency. The cost breakdown is summarized in Table 1. The NRCS cost estimate are included in Table 1. For comparison, NRCS Incentive Estimates is available in Appendix F.

Table 1.

JOB COST ESTIMATE					
Landowner: <u>Cedar Mesa Ditch</u>			Funding Source: <u>EQUIP</u>		 United States Department of Agriculture Natural Resources Conservation Service
Practice: <u>430, 587</u>			Prepared By: <u>JNL</u>		Date: <u>2/1/19</u>
Location: <u>Cedaredge, CO</u>			Checked By: <u>JAM</u>		Date: <u>3/12/19</u>
No.	Description	Unit	Amount	Cost/Unit	Cost
1	24" 80 PSI PIP	LF	5840	\$60.00	\$350,400.00
2	21" 80 PSI PIP	LF	4360	\$50.00	\$218,000.00
3	18" 80 PSI PIP	LF	3135	\$25.00	\$78,375.00
4	15" 80 PSI PIP	LF	3840	\$20.00	\$76,800.00
5	18" HDPE	LF	1500	\$25.00	\$37,500.00
6	Reinforced Concrete Structures	CY	70	\$1,200.00	\$84,000.00
7	Excavation for Concrete Structures				\$10,000.00
8	Select Backfill	Load	1000	\$50.00	\$50,000.00
9	Rock Backfill	ton	1700	\$11.60	\$19,720.00
10	Pipeline Appurtenances				\$50,000.00
11					
20	Contingency, 10%	LS	1	\$97,479.50	\$97,479.50
				Total Estimated Cost:	\$1,072,274.50

Spot checking local prices against NRCS estimates shows that the NRCS grants will be about 75% of the completed cost. Accordingly, we are asking for a loan that is 25% greater than the NRCS estimated cost, or \$1,242,718

Implementation Schedule

The project engineer is expected to complete the final design by mid-September, 2019. Construction is expected to begin Fall of 2019 and to be completed by May 2022. The three participants in the NRCS Grand Program provide the basis for a simple schedule completing one participant's EQUIP project each year. It is very possible that construction can proceed faster, and more than half the project could be completed each year. Cedar Mesa is a very rocky environment (glacial gravels and boulders) possibly slowing progress and, at more than 6000' elevation, severe winters may slow progress.

Impacts

At each of our meetings the various impacts, both positive and negative, were discussed by the membership. Clearly the major benefit is the conservation and beneficial use of more of the water rights held by the membership. Other benefits include salt reduction (estimated at between 800 and 900 tons annually), and the reduced liability associated with the elimination of an open ditch.

The major negative impact is the loss of foliage along the ditch. Cottonwoods line the edges of the ditch in places and provide some landowners with attractive alternatives to the natural sage/scrub native to the area. Others property owners like the sound of moving water where it crosses their property. The ditch company is sensitive to the aesthetics of the current open ditch. Although the gurgle may be eliminated, trees will be preserved wherever possible should the landowners choose to irrigate them. In some instances, trees may be preserved by positioning the pipe to one side or the other of the company's easement. The company is working with individual land owners to mitigate concerns wherever possible.

Permitting

The CMDC will have a signed agreement with Delta County for those areas where the ditch easement and county road easements overlap. Also, the county has agreed to permit CMDC to cross county roads in six places.

Institutional Considerations

Three contracts are in preparation between the ditch company and the three individuals whose NRCS projects will comprise the ditch project. These contracts will transfer the project to the company upon completion and protect the individuals from any financial burden beyond the amount of their NRCS grants.

NRCS requires acknowledgement of all landowners who have Cedar Mesa Ditch easements crossing their property. These have been obtained. Verbal agreements have been made between

the company and Delta County for the treatment of crossings where the pipe will go beneath roads.

CMDC will continue to seek grants and in-kind funding for the project. One particular aspect of Cedar Mesa Ditch is that during its 100+ years of existence, and its relatively high gradient, parts of the ditch have deeply eroded. We have secured an in-kind donation of an estimated 1500 truckloads of nearby fill dirt valued at \$150,000.

Financial Analysis

Several entities will be involved in financing the estimated total project cost of \$1.243 million. The Cedar Mesa Ditch Company is applying for a loan from the CWCB in a maximum amount of \$1,243,718. Of the total loan, up to \$1,045,553 will be used as a construction loan to be reimbursed from NRCS grants. The remaining \$310,0679, a 30-year loan, will be used to accommodate the 25% Company cost share. The actual or estimated amounts by entity are given in Table 2.

Table 2. Sources of Funding (Note: this table attempts to show CMDC will borrow the whole amount and then repay 75% as NRCS grants come in.)

Entity	Grant	Loan	Percent Participation
CWCB	\$0	\$1,243,718	(100%)
Cedar Mesa Ditch	\$0	\$310,697	25%
NRCS	\$974,975	\$0	75%
Totals	\$1,045,553	\$310,679	100%

The Cedar Mesa Ditch Company will cover any costs that exceed the estimated project cost.

The Cedar Mesa Ditch Company is requesting a 30-year loan from the CWCB. The standard agricultural lending rate would be 1.65% resulting in annual payments of \$12,772. The one-year required reserve is already on hand. Table 3 is a summary of the financial aspects of the project. Annual assessments will increase from \$100 per member, to \$325 per member. The assessment levied per share will remain the same. This represents an annual assessment increase of \$13,275, or \$2.21 per acre-foot, based on average annual diversions of 6000 acre-feet.

Table 3. Financial Summary

Project Cost	\$1,242,718
Loan Amount after construction (25% of Project Cost)	\$310,680
CWCB Loan Payment Amount, including 10% loan reserve	\$12,772
Number of Shareholders	59
Number of Shares of Stock	403
Current Assessment per Share	\$155

Future Assessment per Share	\$NA
Current Assessment per Member	\$ 100
Future Assessment per Member	\$ 325
Annual Project Cost per acre-foot (Average annual diversions: 7,425 acre-feet)	\$ 2.21

Since all other funding for the project is in the form of grants, the Company would have no other debt service on this project. Operation and maintenance costs are expected to decrease with the new diversion structure, and can be accommodated by the Company's existing budget.

Credit Worthiness

Cedar Mesa Ditch Company has no existing debt. The first-year loan payment has been approved and is in the 2019 budget.

Alternative Financing Considerations:

The Cedar Mesa Ditch Company has investigated alternative financing sources.

Bank of Colorado has offered a loan for the project with an interest rate exceeding 7%.

Completing the project with BOR funding was explored twice as explained in the "Alternatives" section above. The pressurized system that was required by the BOR was cost prohibitive with the same end results. The current placement of head gates on the Cedar Mesa Ditch provide most users with a pressurized system.

An in-kind grant from the NRCS for engineering design and construction inspection has been obtained.

Collateral

As security for the CWCB loan the CMDC can pledge assessment income and the project itself.

Economic Analysis

It is anticipated that piping the lower portion of CMD will recover about 720 ac/ft of irrigation water each year. In a good water year, water in the Surface Creek Valley may be leased for \$50 an ac/ft, in an average year for \$100 an ac/ft and in a drought year \$200. For water alone, not counting crop loss, the economic loss to CMDC shareholders is about \$72,000. The economic loss of crops associated with this water loss is not available. Over 30 years, value of water loss alone is \$2,160,000. The project cost/benefit ratio is \$2.16/\$1.24 or 1.75. This ratio is a minimum because it does not include crop loss.

Social and Physical Impacts

The project will have positive social impacts since it will assure the continued operation of a currently existing irrigation system. In addition, the elimination of open ditch along several miles of county road will improve safety. The project will have minor physical impacts once construction is complete. The company will work with landowners to mitigate soils restoration, grass and tree plantings for those who wish to restore any lost vegetation.

Conclusions

1. The CMDC is an incorporated entity in the State of Colorado with the ability to enter into a contract with the CWCM for the purpose of obtaining a Water Project Loan.
2. Rights-of Way easements are adequate for the construction of the project.
3. The project will provide for increased water deliveries to the shareholders.
4. The total estimated cost of the project is \$1,242,718 (more or less) and will be financed by NRCS grants to shareholders, in kind services, and cost sharing with the CMDC.
5. The CMDC has been authorized by its shareholders to enter into contacts with members to obtain NRCS grants, CWCB loans, and increase member assessments to fund the project.
6. The project is technically and financially feasible.

Appendix A – CMDC Articles of incorporation

CERTIFICATE OF AMENDMENT OF THE ARTICLES OF INCORPORATION
of the
CEDAR MESA DITCH AND RESERVOIR COMPANY

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This is to certify that at a meeting of the stockholders of the Cedar Mesa Ditch and Reservoir Company, held at Delta, Colorado, on the 6th day of October A. D. 1903, the following resolutions were adopted by more than a two thirds vote of all the stock of said corporation and in good faith outstanding:

First: 'Be it Resolved, by the stockholders here present, that the third declaration of the articles of incorporation of the Cedar Mesa Ditch and Reservoir Company be amended so as to read as follows, to wit; Third: The amount of the capital stock of said Company shall be Four Thousand Dollars and shall be divided into four hundred shares of ten dollars each, par value!

Second: 'Be it Resolved, by the stockholders here present, that the tenth declaration of the articles of incorporation of the Cedar Mesa Ditch and Reservoir Company, be amended so as to read as follows, to wit; Tenth: The location of said Reservoir intended to be constructed by said Company is in the West 1/2 of the S. E. 1/4 and the E. 1/2 of the S. E. 1/4 of Section 36 Town 11 S. R. 94 W. 6 P. M., the initial point thereof situated at South end of dam at a point nearest the corner of Sections 1, 2, 33 and 34, Townships 11 and 12 S. R. 94 W. 6 P. M. bears South 70 degrees 10 min. West 2480 feet distant; situated in Section 36 Town 11 Delta Range 24 West from initial point, bounded as follows: N. 87°45'W., 580 feet, N. 61°00'E., 580 feet, N. 44°15'W., 100 feet, N. 63°00'E., 440 feet, N. 89°05'E., 955 feet, S. 29°15'W., 743 feet, S. 43°30'W., 355 feet, N. 80°15'W., 215 feet, N. 59°15'W., 25 feet, S. 45°15'W., 50 feet, S. 55°00'W., 120 feet, to S. P. and beginning of dam containing an area

of 25.25 acres, as enlarged for dam thirty feet high."

That on the 1st day of September 1903, at a meeting of all the stockholders of said Company, at which all of the stock of said Company was present, the Secretary was directed to call a stockholders meeting, and that there was presented on that day to the President of said corporation, a request by the holders of all of the stock of said Company aforesaid, (as shown by the stock books of said Company,) that a meeting of said stockholders be called on said 6th day of October 1903. That said request was made in writing on said day, and that a meeting of the Directors of said Company was held on said day pursuant to the call of the President of said Company, and thereupon a special meeting of the stockholders of said Company was called to meet on the 6th day of October 1903 for the purpose of considering the question of two proposed amendments. First; to increase the capital stock of said company, and second; to amend the tenth declaration of said articles of incorporation so as to include the enlargement of the Reservoir needed by said Company, as shown by a survey then presented.

That said meeting was called by delivering personally to each stockholder a notice thereof in writing, or by depositing the same in the Post Office at least thirty days prior to said 6th day of October, each mailed notice being properly addressed, stamped and signed by the Secretary, and stating the time and place and object of said meeting.

That on the 6th day of October 1903, and for more than a year prior thereto there were subscribed and paid for all of the one hundred shares of said stock, all of which was then in good faith outstanding; that eighty-five shares of said stock was represented and voted at said meeting and that eighty shares of said stock were voted in favor of said amendments by ballot duly and legally taken at said meeting.

John E. Cole being duly sworn on oath says; that he is the President of the Cedar Mesa Ditch and Reservoir Company; that he has read the above and foregoing certificate and statement and knows the contents thereof, and that the statements therein contained are true of his own knowledge.

his own knowledge.

Subscribed and
State of Colorado)
County of Delta)

John E. Cole

President Cedar Mesa Ditch & Reservoir Co.

My Commission Expires Feb 12, 1908

My Commission Expires Feb. 12, 1964

16th day of October, A.D. 1905
 Willard Fairbank
 Notary Public

I, Porter Plumb, do hereby certify that I am the Secretary of the Cedar Mesa Ditch and Reservoir Company; that I have read the attached and foregoing certificate and that the statements therein contained are true, and that the certificate contains a true and correct account of the proceedings therein mentioned.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the
Seal of said Company at Delta, Colorado, this 16th day of October

A circular postmark from Nilesa, Ditchingham, Norfolk. The text "NILESA, DITCHINGHAM, NORFOLK" is arranged in a circle around the center. In the center, the word "POST" is written in a stylized font. Above the circle, the year "1908" is printed.

Paym Pleunk

Secretary Cedar Mesa Ditch & Reservoir Co.

Appendix B – CMDC By-Laws

BY-LAWS OF THE CEDAR MESA DITCH COMPANY
ADOPTED: 2/29, 1992 AT CEDAREDGE, COLORADO

ARTICLE I

THE CEDAR MESA DITCH COMPANY

The name of the Company shall be the Cedar Mesa Ditch Company, a Non-Profit Corporation.

ARTICLE II **PURPOSES**

The purposes of this Company shall be the same as stated in the Articles of incorporation and primarily to acquire, own, operate and maintain irrigation ditches. To appropriate or acquire by purchase, or otherwise, water rights for the use of the stockholders of the said Company, both from natural streams and from other ditches or reservoirs.

To acquire by purchase, or otherwise, all necessary or desired right of ways for ditches, reservoirs and laterals to serve as carriers of water to the stockholders of said Company. To purchase or otherwise acquire water rights and ditch rights and to own and hold corporate stocks representing such rights.

To levy and collect assessments upon the issued stock of this company or issue and sell additional stock for the purpose of maintenance, repair, operation, reconstruction and relocation of ditches, reservoirs and irrigation facilities owned by or in which this company shall acquire an interest.

To do all acts and things necessary, expedient or usual to the carrying out of the business hereinbefore set forth and all things incidental to a mutual ditch company whether herein before enumerated or not.

ARTICLE III **MEETINGS OF SHAREHOLDERS**

Section 1. Annual meetings of the shareholders for the election of Directors and for other purposes shall be held in Cedaredge, Colorado, or at such other place as the Board of Directors may designate on the last Saturday in February of each year at the hour of 1:30 p.m. or as soon thereafter as of verbal or written notice to each of the shareholders not less than 30 days or more than 50 days before the date of the meeting. Said notice shall be

signed by the President and Secretary Treasurer and also published in the Delta County Independent, Delta County, Colorado.

Section 2. If for any reason an annual meeting should not be called within the time specified in Section 1, then a meeting of the shareholders may be called at any time thereafter by the notice provided for in Section 1 or by notice mailed to each of the shareholders signed by two or more of the shareholders given in accordance with the method described in Section 1.

Section 3. Special meetings of the shareholders of this Company may be called by the Directors at any regular or special meeting of the Directors by motion passed by a majority of the Board. Special meetings of the shareholders shall be called by the Directors upon written request signed by not less than one tenth of all stock issued and published as required in Section 1; provided that such requests shall state the general nature of the business to be transacted and no other business shall be transacted at such special meeting.

Section 4. At all meetings of the stockholders a quorum shall be present upon showing made of the presence, either in person or by proxy, of at least fifty-one percent of the outstanding capital stock, which quorum shall have full authority to transact all business of the stockholders except as required by the laws of the state of Colorado. If there is not a quorum present, those present may adjourn the meeting.

ARTICLE IV ELECTIONS

Section 1. Any shareholder shall be entitled to as many votes at an annual or special meeting of the shareholders as he holds shares of stock in this Company; cumulative voting not allowed.

Section 2. Any shareholder may appoint any reputable person to act as his proxy. Such proxy shall be in writing, designating the number of shares held and shall be signed by the shareholders so appointing the proxy. All such appointments shall also designate the duration of such authority.

Section 3. At the annual meeting of the shareholders of said corporation to be held on the last Saturday in February of each year commencing in 1993, an election of five Board of Directors shall be held by and from the number of those who are shareholders in said corporation. The five candidates receiving the highest number of votes shall serve a one-year term commencing with the date of their election and running up to the time their successors are elected at the annual meeting of said corporation to be held the next succeeding year.

Section 4. At any annual meeting the president, vice-president, or secretary, in that order, or in their absence, any member shall call the meeting to order and thereupon the shareholders present shall elect one of them to preside as chairman of the meeting. If it is a

meeting for the election of Directors, the chairman shall immediately appoint a committee of three for the purpose of examining and reporting upon the proxies present.

Section 5. This committee shall take the names of those voting and the authority of those voting as proxies, together with the number of votes held by each member or by each proxy, and shall count the ballots cast and keep a list of all names voted for and the number each receives, and shall report the results of the same to the chairman who shall declare the five shareholders receiving the highest votes duly elected.

Section 6. The report of such committee, as herein provided for, shall be entered upon the journal, such journal shall be a part of the Company's records, kept for that purpose by the Secretary-Treasurer of the Company.

Section 7. At the option of the holders of the majority of the stock represented at the meeting, elections shall be by written or printed ballot, on which shall be written the name of the person nominated and opposite each name voted for shall be the number of shares voted for that person, except when the Secretary is instructed by a majority vote of those present to cast a unanimous vote for any one or more Directors.

Section 8. In case any member offering to vote as proxy, or by his own stock, is challenged, the shareholders present shall decide by a majority vote the questions of allowing such vote to be cast.

ARTICLE V OFFICERS

Section 1. Immediately after the annual election, as provide by these By-Laws, the Board of Directors shall elect by ballot, each Director being entitled to one vote in person, a President and Vice President from their number, and a Secretary- Treasurer of the Board of Directors, said officers to hold office for one year or until their successors shall be elected and duly qualified.

Section 2. The Board of Directors may, at their option, require bond of Secretary-Treasurer commensurate with his responsibilities, with the expense of the bond to be paid by the Company.

Section 3. The Board of Directors may appoint for any time not longer than one year, any other officer or agent that in the discretion of the Board may be necessary.

Section 4. The Board of Directors shall have full control of all the company's business, approve all bonds, direct the execution of all works, contract for the same, audit and pass upon all bills, direct the amount of force to be employed, determine when and what work shall be done, or the Board may appoint any agent or agents, subject to the control of the Board, to do such of these things as may seem best.

Section 5. The Board may from time to time require faithful performance bonds of any of its officers or agents.

Section 6. The Board shall meet as often as it is necessary to properly and faithfully transact the business of the Company. Special meetings of the Board may be held at any time and called by the President or Secretary. A majority of the Board shall constitute a quorum for the purpose of doing business.

Section 7. All vacancies occurring in the Board of Directors by death, resignation or otherwise, shall be filled by a vote of a majority of the remaining members of the Board. If no consensus is reached by the remaining Board members, they shall be required to call a special meeting of the shareholders to resolve the vacancy question.

ARTICLE VI PRESIDENT

Section 1. The President shall be the chief executive of the Company; he shall sign all official papers and documents of the company; preside at all meetings of the Board and attend to all the duties such as the Board of Directors may direct, and he shall make a full report of all his acts, as such officer for the Directors and shareholders and present same at the annual meeting of the stockholders. During adjournment of the Board, the President shall have all executive authority of the Board.

VICE-PRESIDENT

Section 2. The Vice President shall discharge all duties of the President in the absence of the President, or upon his failure to act. In case the President and Vice - President are absent or fail to act, the Board of Directors may elect a President pro tempore.

SECRETARY-TREASURER

Section 3. The Secretary-Treasurer shall be the custodian of all moneys, bonds, and notes belonging to the Company and shall pay out the same with all checks to be signed by the President or Secretary-Treasurer; he shall keep an account with the Company and himself in a book provided for that purpose and shall make a full report of the accounts at each annual meeting. The Secretary-Treasurer shall keep separate accounts between the shareholders and the Company, in which shall be shown the interest of the Company held by each member and the amount of assessments paid thereon, and shall give a report of any and all such matters at any time when directed to do so by the Board of Directors. The Secretary-Treasurer shall allow or permit no off sets or exchange of accounts due to or from this Company but shall make all disbursements by check.

Section 4. The Secretary-Treasurer shall keep a record of the proceedings of the Board of Directors and of the meetings of the shareholders; shall keep the books and the seal of the Company; he shall attest by his signature and Seal of the Company all official

documents of the Company. He shall keep a complete set of book showing all the accounts, property and transactions of the Company; he shall carefully examine all bills due or against the company; he shall collect all assessments and moneys due the Company and shall annually make a report of this office, or oftener if so ordered to the Board Directors.

Section 5. The Secretary-Treasurer shall submit his books for audit after January 31 of each year and prior to the annual meeting and present the auditor's report at the Annual Meeting to be passed on by the stockholders and filed for record.

ARTICLE VII CERTIFICATES OF STOCK

Section 1. Certificates of stock shall, upon full payment therefore, be issued under the seal of the Company and shall be signed by the President and Secretary-Treasurer of the Company. No transfer of the stock shall be allowed except upon surrender and cancellation of the old certificate, and the Secretary-Treasurer shall have the old certificate cancelled before signing or issuing a new one; provided that no certificate of stock shall be transferred while the assignor of such certificate shall be indebted to the Company. A bond of sufficient security shall be required in replacement of lost stock.

ARTICLE VIII TRANSFER AND ACCOUNT BOOKS

The transfer stock and account books shall be closed on and as of Monday preceding the Annual Meeting.

ARTICLE IX ASSESSMENTS AND FORFEITURES

Section 1. All assessments upon shares of stock shall be levied by a majority vote of stockholders present at the Annual Meeting entitled to vote, or may be levied at a special meeting of the stock holders called for that purpose. All assessments shall be paid in cash, and all such assessments shall be demanded in a general call pro rata upon all shares of stock issued or subscribed for, and/or by the proportionate levy determined by the amount of water delivered to the shareholder in the preceding season.

Section 2. The Secretary -Treasurer shall keep a record of the names of stockholders to whom such notice is given and record of the time and manner of serving the notice, and if service is had by depositing notice in the post office, the address to which notice is directed shall be given in such records.

Section 3. In all cases of assessments levied, all stock, upon which such assessments remain due and unpaid, for a period of thirty days after notice given as provided for in Section 1 of this said Article may, at the option of the Board of Directors, bear a penalty of 10% and be declared forfeited by the Board of Directors and such forfeit of stock shall be advertised for sale in one of the newspapers published in or near said Delta, Colorado, at

the cost of the delinquent stockholders, and if sold, the amount received therefor, over and above the assessments thereon and the amount due the Company, shall be returned to the owner of said stock. A notice to delinquent stockholders, and if sold, the amount received therefor, over and above the assessments thereon and the amount due the Company, shall be returned to the owner of said stock. A notice to delinquent stockholders shall be sent by registered mail.

Section 4. No stockholder shall carry in the Cedar Mesa Ditch more water than the ratio of the number of share owned by him to the total outstanding shares of the Company bears to the carrying capacity of the ditch.

ARTICLE X AMENDMENT OF BY-LAWS

Section 1. These By-Laws shall not be amended or altered except at a regular meeting of the stockholders and then only upon notice of the proposed amendment having been offered in writing and filed with the Secretary-Treasurer at least 30 days before the Annual Meeting.

ARTICLE XI RECALL

Section 1. At any time after a Director has served for more than 60 days, a Petition for his recall may be filed with the Secretary-Treasurer. If the Petition contains signatures representing at least 25% of the shareholders, the Board shall schedule an election to determine whether or not the challenged member shall retain office. This election shall be held within 30 days of the filing of the Petition. If the Director is recalled, the vacancy will be filled as provided in Article V, Section 7.

Cedar Mesa Ditch Company

Amendment to the By-Laws – Adopted February 24, 1996

Stock in the Cedar Mesa Ditch Company will not be transferred in amounts of less than one full share unless each transfer continues the entire ownership of stock in the company and is conveyed to a new owner in a single undivided transfer. *Page 126*

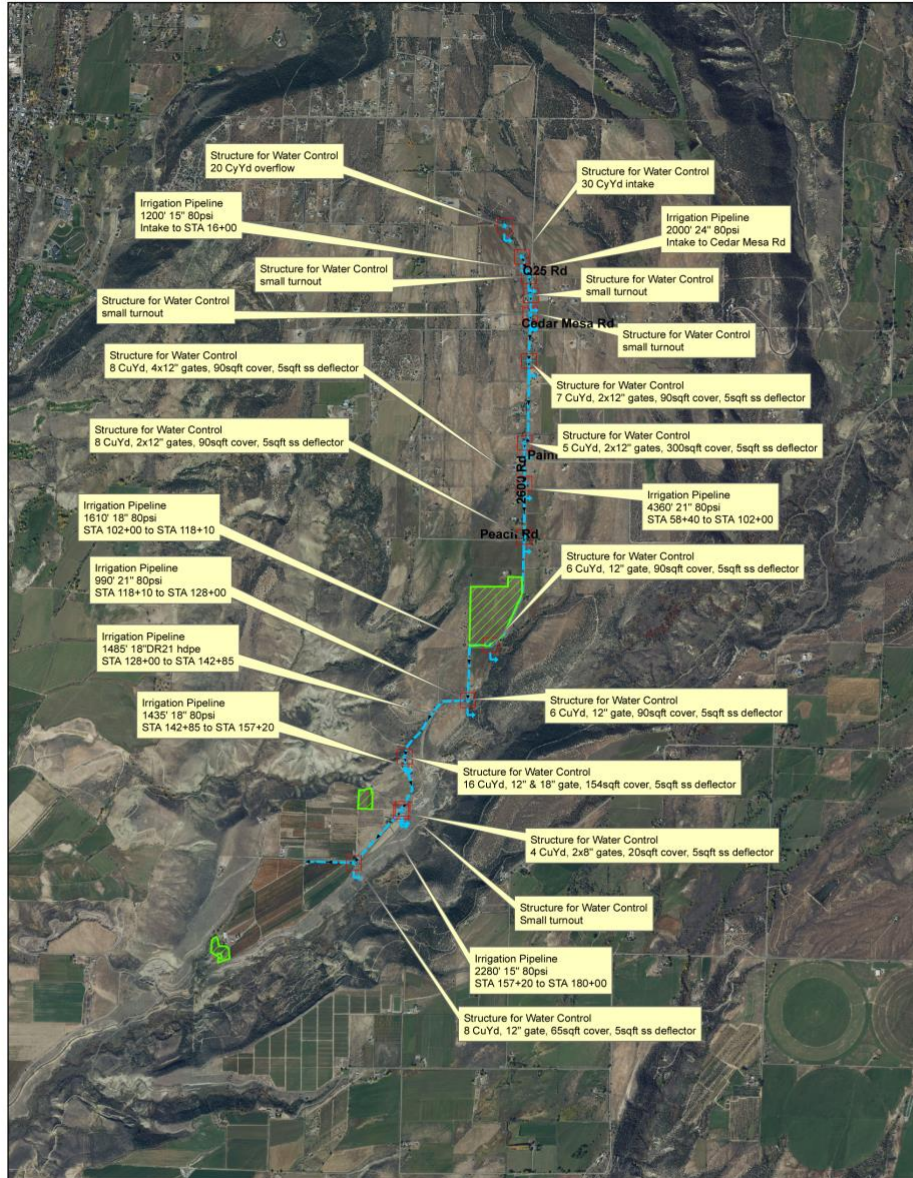
Amendment to the By-Laws – Adopted February 26, 2000

The minimum tum will be for no less than .25 cfs, (1/4) of water.

This motion was made by Barnes, seconded by Fritchman and was approved. *Page 130-131*

Appendix C –Map and Preliminary Plan For CMDC Piping Project

Customer(s): ROBERT B HALLEY, Conservation Plan Map Field Office: DELTA SERVICE CENTER
ERIK B FRITCHMAN, Agency: USDA NRCS
EDWARD H BADDING Assisted By: CASEY HARRISON
District: DELTA CONSERVATION DISTRICT Delta County, Colorado



Legend

- Resource Inventory (Point)
- Resource Inventory (Line)

Prepared with assistance from USDA-Natural Resources Conservation Service

Date: 5/28/2019



Appendix D – CMDC Water Rights

State of Colorado

Water Rights Tabulation

Page 1 of 1

Name of Structure	Structure Type	Water Source	PLSS Location	Adj Date	Prev Adj Date	Appro Date	Admin No	O#	Priority Date	Decreed Uses *	Net Abs	Net Cond	Net APEX Abs	Net APEX Cond	Decreed Units	Seasonal Limit	WDID
CEDAR MESA DITCH	Ditch	SURFACE CREEK [00175359]	NE SW 26 94.0W 12.0S S	9/28/1907	2/17/1906	9/15/1894	20501.16329	0	2/17/1906	1	10.0000	0.0000	0.0000	0.0000	C	No	4000675
CEDAR MESA DITCH	Ditch	SURFACE CREEK [00175359]	NE SW 26 94.0W 12.0S S	6/23/1914	3/20/1908	9/15/1894	21263.16329	0	3/20/1908	1	16.0750	0.0000	0.0000	0.0000	C	No	4000675
CEDAR MESA DITCH	Ditch	SURFACE CREEK [00175359]	NE SW 26 94.0W 12.0S S	3/20/1954	5/28/1937	9/15/1894	31924.16329	0	5/28/1937	8	2.0000	0.0000	0.0000	0.0000	C	No	4000675
CEDAR MESA DITCH	Ditch	SURFACE CREEK [00175359]	NE SW 26 94.0W 12.0S S	12/31/1998	12/31/1997	12/31/1894	54056.16436	0	12/31/1997	1	24.0000	0.0000	0.0000	0.0000	C	No	4000675

Appendix E – Summary of 1975 CMDC Piping Study

PROJECT SUMMARY

General

The Cedar Mesa Ditch Company proposed project is located in Delta County, Colorado just three miles east of the town of Cedaredge, Colorado. During the early thirties, when times were hard, a lot of the decree water available to the farmers on Cedar Mesa was sold. Without adequate water, the farmers on Cedar Mesa cannot expect a reasonable return on their farming investments.

The Cedar Mesa Ditch Company was organized as a non-profit organization. The exact date of the organization's formation is not known as most of the records have been lost. The Cedar Mesa Ditch Company's water rights date back to 1894.

There are 403 shares of capital stock in the Cedar Mesa Ditch Company and their financial record is good. They have established credit ratings with the Wichita Bank of Cooperatives and local banks. They also have a year's cash reserve on hand.

The Cedar Mesa Ditch Company serves approximately 1,700 acres of irrigated land. The climate in the area is semi-arid, characterized by relatively pleasant year around temperatures. The soils are of the Orchard series and are deep, well-drained and moderately fine textured. The irrigated areas are nearly level and gently sloping soils on high mesas.

The U. S. Bureau of Reclamation has done an extensive study for the Grand Mesa Project which encompasses the Cedar Mesa area. In this report the Bureau of Reclamation determined the repayment capacity of the irrigated land in the Grand Mesa Project. In cooperation with the Bureau of Reclamation, these prices have been indexed to reflect the 1973 crop prices and, as a result of this indexing, the Cedar Mesa area has been determined to have a repayment capacity of \$22 per irrigated acre.

The Cedar Mesa Ditch delivery system is inefficient due to its great length and water delivery fluctuation; the peak water delivery occurs in the late evening hours and recedes in the early morning hours. This streamflow characteristic requires almost daily recharging of the canal water. The Soil Conservation Service prepared a Watershed Investigation Report in June, 1973. In this report they estimated the seepage losses in the Cedar Mesa Ditch at forty to fifty percent.

The project is feasible, but state and Federal assistance will be required. Federal assistance is expected in the form of an Agricultural Stabilization and Conservation Service special projects grant. State aid is expected in the form of a long term, low interest loan from the Colorado Water Conservation Board.

The project proposes the construction of a 40 acre-foot capacity control reservoir to control the wide daily range of flows in the ditch. The project also proposes the construction of a pipeline in the ditch to eliminate water losses. One pipeline alternate would be tantamount to lining the ditch, the other two alternates would pressurize the ditch flows to allow for the operation of sprinkler irrigation systems.

5400 ^{acres} ~~acres~~
C.M.

In addition to the control reservoir, there are three pipeline alternates.
An outline of the estimated costs follow:

<u>Item</u>	<u>Total Cost</u>	<u>Annual Cost per Acre</u>
Control Reservoir	\$ 64,000	\$1.91
Alt. 1. Pipe Plan	192,000	3.49
Alt. 2. Sprinkler Plan	199,360	3.55 *
Alt. 3. Middle Plan	278,960	4.20 *✓

On the preceding page it was stated that if the project should proceed that State and Federal assistance would be required in order to bring this project to reality. There are several other factors that will be needed in order to do this and that includes 100 percent agreement amongst the water users as to the amount of water they get per share. The construction of the control reservoir with or without the pipe plan would allow each water user to receive water in proportion to the amount of shares of ditch stock that they own. Due to the exorbitant cost of providing the pressure pipe with a sufficient diameter to carry the water as proposed in the sprinkler plan or middle plan, the water users below station 335+00 would receive less water per share than the water users above station 335+00.

In the Watershed Investigation Report prepared by the Soil Conservation Service for the Cedar Mesa Ditch in June, 1973, it was stated that the annual benefits of a project of this nature would be \$18.00 per acre. The Bureau of Reclamation, in the Grand Mesa Project Report dated September, 1973, estimated the average annual benefits for irrigation alone at \$4,502,000 for 28,270 acres, 20,840 acres was supplemental service land, 7,430 acres as full service land. The Grand Mesa Project would provide 52,100 acre-feet of water at points of diversion and 42,500 acre-feet of water at farm headgates. Using the Bureau of Reclamation figures, the average annual benefit per acre of service land is \$159 per acre or \$105 per acre-foot of water at farm headgates.

For the purposes of this report the total costs were determined by amortizing the total construction costs over a fifty-year period at 6 percent interest. The benefits of the Cedar Mesa project were estimated using a conservative average of the results of the Soil Conservation Service and Bureau of Reclamation reports. These benefits are tabulated below.

CEDAR MESA BENEFITS vs COSTS

<u>Item</u>	<u>Benefits</u>	<u>Per Acre Costs</u>	<u>Ratio</u>
Control Reservoir	\$10.00	\$ 2.43	4.11
Pipe Plan	18.00	9.18	1.96
Sprinkler Plan	22.00	9.47 *	2.32
Middle Plan	22.00	13.25 *	1.66
Pipe Plan with Control Reservoir . . .	24.00	11.55	2.08
Sprinkler Plan with Control Reservoir .	28.00	11.90 *	2.35
Middle Plan with Control Reservoir . .	28.00	15.68 *	1.79

Based on a break-even ratio at 1 to 1, the project is feasible and it is recommended that the Cedar Mesa Ditch Company proceed with the construction of a control reservoir in combination with the sprinkler plan.

* Excluding cost of individual sprinkler systems.

PRELIMINARY DESIGN REPORT

Project Name:	Cedar Mesa Ditch
Engineering Job Class:	VI
Owner/Sponsor:	Cedar Mesa Ditch Company
Field Office:	Delta
Conservation District:	Delta
Prepared By:	Jeff Long (NRCS Engineer) on behalf of TSP, Robert Gallegos
Date of Report:	2/14/2019

Cedar Mesa Ditch, a privately-owned ditch company in Cedaredge Colorado is seeking financial and technical assistance through the NRCS' Environmental Quality Incentives Program (EQIP) to pipe 3.4 miles of open ditch. Cedar Mesa Ditch's board Erik Fritchman, Edward Badding and Robert Haley have applied separately for EQIP funding as a group project. Clients are looking to reduce losses associated with open ditch conveyance of irrigation water. They hope to construct the project in Fall of 2020.

This project encompasses 2 practices, Structure for Water Control (587) and Irrigation Pipeline (430). Practice 430 includes 5,840' of 24" 80 PSI PIP, 4,360' of 21" 80 PSI PIP, 3,135' of 18" 80 PSI PIP, 3,840' of 15" 80 PSI PIP and 1500' of 15" 80 PSI PIP. Practice 587 includes a 12 CY inlet structure as well as 15 turnout structures to deliver water to landowners totaling approximately 70 CY.

The pipeline's invert is located at elevation, 6558' and terminates at 5862'. The system is designed to be an open system and never develops a significant amount of head. Head is controlled through a series of turnout boxes to producers. Flow ranges from 23.75 cfs down to 6 cfs.

Piping Cedar Mesa Ditch has been classified as a class VI job based on the ditch's flowrate. Class V, 430 and 587, cutoff at 5,000 gpm. With an expected flowrate of 23.75 cfs (10,663 gpm), this project has been determined to be Class VI.

Cedar Mesa Ditch is a manmade diversion of Surface Creek North of Cedaredge with a decreed rate of 52 cfs. Irrigation water in this ditch is used on a variety of crops from hay to orchards. In 2018, a number of people on the ditch were left with reduced water rights due to an ongoing drought. With a significant amount of subsistence farmers in the area, providing an adequate supply of water is critical.

An alternative to implementing the project would be to leave as-is and to further reduce water use with on-farm projects. However, with a potential 50% water loss through open ditch, piping the delivery will provide the most water savings benefits. Further water efficiency projects with landowners is also not precluded by completing this project.

Besides the benefit of a reduction of water losses through the ditch, ditch shareholders will be

provided with higher quality water that requires less filtration or no filtration at all depending on the water use. A pipeline will also require less maintenance than an open ditch. No longer will the ditch need to be dredged for sediment or burned to reduce vegetation.

Calculated EQIP incentive estimates are \$910,516.83. Expected project costs are estimated to be approximately \$1.07 million.

TSP, Robert Gallegos has completed a preliminary design of the system. A preliminary survey has been conducted with road crossings, utilities and site constraints being identified.

All affected landowners' permission and water rights have been collected at the time of this report.

TSP, Robert Gallegos, will provide all construction oversight. With this report, a preliminary design has been included as well as supporting design and hydraulic computations. Robert Gallegos is also committed to providing a final design. NRCS technical staff will not be needed except to review deliverables.

Attachments: Cedar Mesa Ditch Preliminary Design, Design Support Calculations, Cost Estimate, EQIP Incentive Estimate, Conservation Plan Map

Distribution List:

John Andrews, Colorado State Conservation Engineer

Gabriel Lucero, Area Engineer

Lori Kassib, Delta County District Conservationist

Casey Harrison, Delta County Soil Conservationist

TECHNICAL CONCURRENCE & ADMINISTRATIVE APPROVAL

A. Technical Concurrence

The information in this report is accurate, the proposed project will accomplish the client's objectives, the proposed design requirements are adequate for the level of complexity associated with this job, and staffing requirements represent the amount of NRCS staff time needed to plan, design, and construct this project. *Prepared by:*
Signature

Concurred:

State
Conservation
Engineer

Title